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BACHMAN & LAPOINTE, P.C.

900 CHAPEL STREET

SUITE 1201

NEW HAVEN, CT 06510

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TIMOTHY M. MORRIS, WAYNE R. SPOCK,
PETER GERARD SMITH, MATTHEW J. SCHRYVER,
RONALD S. WALTHER, ROBERT L. GUKEISEN,
and EDWARD T. HAGAMAN

Appeal 2008-4331
Application 10/694,645
Technology Center 3600

Decided: January 29, 2009

Before WILLIAM F. PATE, III, LINDA E. HORNER, and
KEN B. BARRETT, *Administrative Patent Judges*.

BARRETT, *Administrative Patent Judge*.

DECISION ON APPEAL
STATEMENT OF THE CASE

Timothy M. Morris et al. (Appellants) seek our review under
35 U.S.C. § 134 from the final rejection of claims 20 through 27 and 30
through 32. We have jurisdiction under 35 U.S.C. § 6(b).

SUMMARY OF THE DECISION

We AFFIRM.

THE INVENTION

Appellants' claimed invention pertains to a system utilizing gas turbine engine bleed air to generate power for aircraft accessories. (*See* Spec. 2, ¶¶ [0008], [0011].) Claim 20, reproduced below, is representative of the subject matter on appeal.

20. A system for generating accessory power from a gas turbine engine, said system comprising:

means for monitoring at least one parameter which provides information about an incipient change in power demand;

means for supplying bleed air from said engine during a transient state in response to said at least one monitored parameter; and

a pneumatically operated means for receiving said bleed air and for generating power to operate equipment onboard an aircraft.

THE REJECTIONS

The Examiner relies upon the following as evidence of unpatentability:

Wojciehowski	US 4,175,701	Nov. 27, 1979
Schafer	US 5,752,379	May 19, 1998

The Examiner also relies on Appellants' Admitted Prior Art (AAPA), page 5, paragraph 0028 of the Specification.

The following rejections are before us for review:

1. The Examiner rejected claims 20 through 25 and 32 under 35 U.S.C. § 103(a) as unpatentable over Wojciehowski and Schafer;
2. The Examiner rejected claims 26, 27, 30, and 31 under 35 U.S.C. § 103(a) as unpatentable over Wojciehowski, Schafer and AAPA.

ISSUES

The issues before us include whether the Appellants have shown that the Examiner erred in rejecting claims 20-25 and 32 under 35 U.S.C. § 103(a) as unpatentable over Wojciehowski and Schafer; and whether the Appellants have shown that the Examiner erred in rejecting claims 26, 27, 30, and 31 under 35 U.S.C. § 103(a) as unpatentable over Wojciehowski, Schafer and AAPA. These issues turn on whether the cited references disclose all of the limitations of the rejected claims and whether one of ordinary skill in the art would have found it obvious to combine the teachings of the references to arrive at the inventions defined by the rejected claims.

FINDINGS OF FACT

We find that the following enumerated findings are supported by at least a preponderance of the evidence.

1. In the context of Appellants' claimed invention, "the term 'transient state' refers to any change in power demand whether it be a change in engine power demand due to a change in engine state or a change in any mechanical or electrical power demand due to a change in any accessory state." (Spec. 4, ¶ [0024].)

2. The Specification identifies “an inputted cockpit signal 34 which indicates aircraft power demand change” as an example of one of the “methods of detection” that provides knowledge of gearbox generator power demand to the control device 32. (Spec. 5, ¶ [0026].) Such a signal “indicate[s] to the device 32 that an increase or decrease in power demand is incipient and thus a transient state is about to occur or is occurring.” (*Id.*) Therefore, Appellants’ Specification identifies an inputted cockpit signal as one source of information about an incipient change in power demand.

3. Wojciehowski discloses an apparatus and method for spraying liquid from an aircraft for spraying fields and for fire fighting. (Wojciehowski, col. 1, ll. 5-8.)

4. Wojciehowski teaches a system that utilizes bleed air from a gas turbine engine 12 to drive an air turbine-type motor 24. (Wojciehowski, col. 2, ll. 23-30, 37-42.) “Motor 24 includes an axial flow turbine 26 driven by the pressurized airflow.” (*Id.*, col. 2, ll. 42-43.) Wojciehowski’s motor drives a liquid pump 28 through a gear reduction transmission. (*Id.*, col. 2, ll. 45-48.) The motor, transmission, and pump are located on the aircraft. (*Id.*, col. 2, ll. 48-51.)

5. Wojciehowski’s motor is driven by a “parasitic flow of bleed air from the working cycle of the engine.” (Wojciehowski, col. 4, ll. 40-41.) Thus, Wojciehowski’s pneumatic motor has an effect on engine operation and is not completely independent of engine operation.

6. Wojciehowski discloses a pneumatically operated poppet valve 46 that controls the flow of bleed air from the engine. (Wojciehowski, col. 2, l. 66 - col. 3, l. 5; *see also* App. Br. 8.)

7. Wojciehowski's valve 46 operates in response to inputs from the manually operated switch 86 that indicates the initial demand for pump power, and from actuator 76 that indicates the desired rate of liquid spray. (*See* Wojciehowski, col. 3, ll. 37-46; col. 4, ll. 12-29; App. Br. 8-9.) The valve also operates in response to pressure switch 88 that indicates a depletion of liquid in the reservoir, thus signaling that the demand for pump power is not longer needed. (*Id.*, col. 4, ll. 33-41.)

8. Therefore, Wojciehowski's valve 46 operates during a transient state in that it responds to various inputs indicating an incipient change in power demand.

9. The Examiner found that the operation of the Wojciehowski's pneumatically operated means inherently increases the stall margin available to the high pressure compressor. (*See* Ans. 3, 6; *see also* Final Rej. 2, 4.) The Examiner stated that "[w]hen the compressor bleed air (in Wojciewhoskie [sic] et al's system) is used to power the pneumatic means during the transient state, the stall margin is increased." (Final Rej. 4.)

10. Appellants' Specification states:

By opening a compressor bleed during a transient state or at any other operating point, the operating line can be lowered, increasing the stall margin (point B in Figure 1). The bleed air is directed to a pneumatically operated device which reduces demand for mechanical shaft power from the high pressure rotor of the gas turbine engine. Reducing mechanical power demand lowers the compressor operating line, further allowing a given transient excursion with improved stall margin as shown by line 18 in FIG. 1.

(Spec. 4, ¶ [0024]; *see also* App. Br. 6 (reiterating the same).)

11. Therefore, the Examiner's determination that the operation of Wojciehowski's pneumatically operated means inherently increases an

amount of stall margin available to the compressor of the combined references is reasonable.

12. Schafer discloses a system that utilizes a full authority digital engine control (FADEC) to alert a pilot to non-recoverable surge conditions and blow-out conditions of a gas turbine engine. (Schafer, col. 1, ll. 9, 32-35.)

13. Schafer teaches that the use in a gas turbine system of a FADEC was well known in the art as of the filing date of Appellants' application. (Schafer, col. 1, ll. 32-35; col. 2, ll. 25-31; Fig. 1; *cf.* Spec. 4, ¶ [0026] (Appellants' control device 32 "may be any suitable FADEC device known in the art.").)

14. Schafer's fuel control primarily responds to power requests from a signal indicating the position of the power lever 16.1. (Schafer, col. 2, ll. 34-37.) The power lever is located in the cockpit. (*See* Schafer, Fig. 1.)

15. Schafer discloses that "[t]he fuel control 12 receives engine operating information over data lines 20, such as engine speed N2, temperature TEMP, compressor pressure PB and exhaust gas temperature EGT." (Schafer, col. 2, ll. 37-40.)

16. Schafer's Figure 1 depicts a two spool gas turbine engine 10 with a first compressor (a low pressure compressor having a rotor speed N1) receiving air at ambient pressure and a second compressor (a compressor having a rotor speed N2) receiving air compressed by the first compressor. (*See* Schafer Fig. 1; col. 1, ll. 41-43 (indicating that N2 represents the engine speed).) Thus, Schafer's second compressor is a high pressure compressor.

17. The Examiner found that Schafer's FADEC system has feedback loops (Ans. 3, 6), and Appellants do not dispute this finding (*see* App. Br. 13).

18. Appellants' Admitted Prior Art (AAPA) teaches that pneumatically integrated generators that supply electrical or mechanical power are well known in the art. (Spec. 5, ¶ [0028].)

19. Appellants' Specification, describing the prior art, states:

Horsepower extraction from a gas turbine engine typically incorporates a mechanical gearbox that is driven by a power takeoff shaft that is directly connected to one of the main drive shafts in the engine. The gearbox is mounted in such a way as to facilitate the subsequent attachment of all of the engine-driven accessories such as a fuel pump, an oil pump, a hydraulic pump, electrical generators, etc.

(Spec. 1, ¶ [0002].)

20. Concerning the rejection of claims 26, 27, 30 and 31, Appellants concede that "the Examiner has shown ... that certain individual claimed features by themselves are old in the art." (App. Br. 15.)

21. The prior art of record indicates that the person of ordinary skill in the art of gas turbine engines has a high level of skill. (*See, e.g.*, Schafer, col. 1, ll. 14-29.)

22. One of ordinary skill in the art would know how to utilize an electronic control system, like a FADEC, to monitor a parameter providing information about an incipient change in power demand and to open or modulate a bleed air control valve in response to that monitored parameter.

23. The person of ordinary skill hoping to improve Wojciehowski's accessory power generation system would not ignore Schafer's teaching of

digital controls simply because Schafer was directed to improving surge detection.

PRINCIPLES OF LAW

During examination of a patent application, pending claims are given their broadest reasonable construction consistent with the specification. *In re Prater*, 415 F.2d 1393, 1404-05 (CCPA 1969); *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). It is Appellants' burden to precisely define the invention, not the United States Patent and Trademark Office's. *In re Morris*, 127 F.3d 1048, 1056 (Fed. Cir. 1997) (citing 35 U.S.C. § 112, ¶ 2). Appellants have the opportunity to amend the claims during prosecution, and broad interpretation by the Examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. *Prater*, 415 F.2d at 1404-05.

In construing a means-plus-function claim limitation in accordance with 35 U.S.C. § 112, ¶ 6, one first identifies the function of the limitation and then looks to the specification and identifies the corresponding structure for that function. *Med. Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1210 (Fed. Cir. 2003).

"Section 103 forbids issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.'" *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, ___, 127 S. Ct. 1727, 1734 (2007) (quoting 35 U.S.C. § 103). The question of obviousness is resolved on the basis of underlying factual determinations

including: (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations.

Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 17-18 (1966); *see also KSR Int'l Co.*, 550 U.S. at ___, 127 S. Ct. at 1734 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”). The scope and content of the prior art includes the explicit and inherent teachings of the prior art. *In re Zurko*, 258 F.3d 1379, 1383-84 (Fed. Cir. 2001) (citing *In re Napier*, 55 F.3d 610, 613 (Fed. Cir. 1995)).

In *KSR*, the Supreme Court emphasized “the need for caution in granting a patent based on the combination of elements found in the prior art,” *KSR Int'l Co.*, 550 U.S. at ___, 127 S. Ct. at 1739, and discussed circumstances in which a patent might be determined to be obvious. In particular, the Court pointed out that “the principles laid down in *Graham* reaffirmed the ‘functional approach’ of *Hotchkiss* [*v. Greenwood*], 11 How. 248 [(1851)].” *KSR Int'l Co.*, 550 U.S. at ___, 127 S. Ct. at 1739 (citing *Graham*, 383 U.S. at 12). The Court reiterated that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* at ___, 127 S. Ct. at 1739. The Court also noted that “when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.” *Id.* at ___, 127 S. Ct. at 1740 (citing *United States v. Adams*, 383 U.S. 39, 50-51 (1966)). The Court explained:

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

Id. at ___, 127 S. Ct. at 1740. The operative question in this “functional approach” is thus “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *Id.* at ___, 127 S. Ct. at 1740.

“The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art.” *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (citations omitted); *see also In re Sneed*, 710 F.2d 1544, 1550 (Fed. Cir. 1983) (“[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review.”); *In re Nievelt*, 482 F.2d 965, 968 (CCPA 1973) (“Combining the *teachings* of references does not involve an ability to combine their specific structures.”).

“Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references.” *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (citing *In re Keller*, 642 F.2d 413, 425 (CCPA 1981)).

ANALYSIS

The Rejection of Claims 20 through 25 and 32 Under 35 U.S.C. § 103(a) as Unpatentable Over Wojciehowski and Schafer

Claim 20

As an initial matter, we note that many of Appellants' assertions concerning the patentability of claim 20 are directed to the purported shortcomings of the individual references. (*See, e.g.*, App. Br. 9, 11.) Appellants' assertions are misplaced as the Examiner's rejection is based on the combination of references. *See In re Merck & Co.*, 800 F.2d at 1097.

Appellants appears to argue that "there is no basis for the combination of references" because the Examiner did not find that Schafer's control system may be directly incorporated into Wojciehowski's system. (App. Br. 10-11.) However, the structural features of a cited reference need not be capable of being bodily incorporated into another reference to render the claimed invention obvious. *In re Keller*, 642 F.2d at 425. The Examiner considered what the combined teachings of the references would have suggested to one of ordinary skill in the art (*see, e.g.*, Final Rej. 3-4; Ans. 5), and, thus, applied the proper analysis, *In re Keller*, 642 F.2d at 425.

Appellants contend that the combined references fail to disclose the recited "means for monitoring at least one parameter which provides information about an incipient change in power demand." (App. Br. 10.) This limitation is a means-plus-function limitation under the sixth paragraph of 35 U.S.C. § 112. The claimed function is monitoring at least one parameter which provides information about an incipient change in power demand. The corresponding structure for that function includes control device 32. (*See Spec.* 4-5, ¶ [0026]; *see also* App. Br. 2 (identifying item 32 as the monitoring means).) "[T]he control device 32 may be a full authority

digital engine control device (FADEC)[.]” (Spec. 4, ¶ [0026].) Schafer discloses the use of a FADEC in a gas turbine engine system. (Fact 12.) Thus, the combination of references does contain a monitoring means.

Appellants assert that the Examiner’s statement that “[t]he claim calls for a means for monitoring incipient change in power demand” (Ans. 4), “mischaracterizes the limitations” and “is wrong” (Reply Br. 3). Appellants point out that the claim recites a means for monitoring a parameter providing information about an incipient change rather than a means for monitoring an incipient change. (Reply Br. 3.) Although the Examiner did not quote the entire limitation, the Examiner does not appear to have ignored any aspect of that limitation. (See Ans. 5 (finding that Wojciehowski’s switch can provide information about an incipient change in power demand).) We see no error arising from the Examiner’s paraphrasing.

Appellants argue that Schafer’s FADEC system is not the claimed monitoring means because Schafer’s FADEC is not monitoring a parameter providing information about an incipient change in power demand. (App. Br. 11.) Appellants assert that Schafer’s FADEC is “operating in response to the input from the power level control” rather than monitoring a parameter. (*Id.*) However, Appellants’ Specification identifies an inputted cockpit signal as one source of information about an incipient change in power demand. (Fact 2.) Schafer’s fuel control primarily responds to power requests from a signal indicating the position of the power lever located in the cockpit. (Fact 14.) Thus, Schafer’s FADEC monitors a parameter providing information about an incipient power demand change. Further, Schafer’s FADEC monitors various engine parameters (Fact 15), and one of

ordinary skill in the art would have known how to apply a FADEC in the manner recited in claim 20 (Fact 22).

Appellants also argue that the combined references lack the recited “means for supplying bleed air from said engine during a transient state in response to said at least one monitored parameter.” (App. Br. 10, 12.) This limitation is also a means-plus-function limitation. The claimed function is supplying bleed air from said engine during a transient state in response to said at least one monitored parameter. The corresponding structure for that function includes valve 38. (*See* Spec. 5, ¶ [0027]; *see also* App. Br. 2 (identifying item 38 as the bleed air supplying means).) Appellants concede that Wojciehowski’s poppet valve 46 controls the supply of bleed air (*see* App. Br. 8), but appear to argue that Wojciehowski’s valve does not do so in response to a monitored parameter (*see* App. Br. 9).

Wojciehowski’s bleed air supply valve operates during a transient state in response to various inputs indicating a change in power demand. (Facts 7, 8.) One of ordinary skill in the art would know how to utilize a gas turbine engine control system to operate a control valve in response to monitored parameters. (Fact 22.) The recited means for supplying bleed air in response to a monitored parameter does not impart patentability because it is merely the predictable result of the combination of Wojciehowski’s pneumatically controlled bleed air valve and Schafer’s digital engine control system. *See KSR Int’l Co.*, 550 U.S. at ___, 127 S. Ct. at 1739 (“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.”)).

Appellants assert that:

The present invention is directed to two key elements not addressed in the Wojciehowski et al. reference. The first is the hybrid nature of the design, simultaneously using engine mechanical shaft and pneumatic power to drive a variety of engine mounted parasitic load devices including fuel pumps, oil pumps, hydraulic pumps, and electrical generators. ... The second important distinction is that the present invention makes no claim of minimizing the parasitic load on either the engine or the airframe.

(App. Br. 7-8.) Neither “key element” serves to patentably distinguish the claimed invention over the combined references. As to the first “key element,” claim 20 does not require “the hybrid nature.” Claim 20 requires a pneumatically operated means, but not the simultaneous use of both a pneumatically operated means and a means utilizing mechanical shaft power. Appellants’ argument concerning the second element is unclear. It appears that Appellants are restating the same unpersuasive argument concerning the hybrid nature of the design. (*See* App. Br. 8 (asserting that the present invention provides for mechanical shaft power extraction “as opposed to the reference’s pneumatic only source.”).) Further, Appellants do not point to any claim limitation that excludes the minimization of parasitic load.

Appellants contend that claimed subject matter cannot be obvious because “neither cited and applied reference is concerned with the problem addressed by Appellants.” (Reply Br. 4.) This argument is unavailing as the cited prior art need not be directed to the problem Appellants were trying to solve. *KSR Int’l Co.*, 550 U.S. at ___, 127 S. Ct. at 1741-42.

Appellants assert that the obviousness rejection fails because “there is absolutely no reason why one of ordinary skill in the art would be motivated

to include a FADEC such as Schafer et al.’s system in Wojciehowski et al.’s system ... [and] the prior [art] as a whole does not suggest the desirability of the combination.” (App. Br. 10 (citing *In re Beattie*, 974 F.2d 1309, 1311 (Fed. Cir. 1992); *see also* App. Br. 11.) This argument is foreclosed by *KSR*, in which the Court rejected the rigid requirement of a teaching, suggestion or motivation to combine known elements in order to show obviousness. *KSR Int’l Co.*, 550 U.S. at ___, 127 S. Ct. at 1741. Nonetheless, the desire to improve and update an older pneumatically controlled system with a more modern electronic control system, like the FADEC, provides a motivation to combine the references. *See Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (It would have been obvious “to update [the prior art electro-mechanical device] using modern electronic components in order to gain the commonly understood benefits of such adaptation, such as decreased size, increased reliability, simplified operation, and reduced cost.”).

Appellants also contend that “someone looking to improve a liquid spraying system such as Wojciehowski et al.’s would not look to Schafer et al. and someone looking to improve a surge detection system such as Schafer et al.’s would not look to Wojciehowski et al.” (App. Br. 12.) We disagree. “Common sense teaches ... that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *KSR Int’l Co.*, 550 U.S. ___, 127 S.Ct at 1742. In this case, both references pertain to the gas turbine arts. (*See* Facts 4, 12.) The person of ordinary skill hoping to improve Wojciehowski’s accessory power generation system would not ignore Schafer’s teaching of digital controls

simply because Schafer was directed to improving surge detection.
(Fact 23.)

Wojciehowski discloses a system for generating accessory power from a gas turbine engine with a pneumatically operated power generating means and a bleed air supply valve. (Facts 4, 6.) Schafer discloses a more modern digital gas turbine engine control system. (Fact 12.) Appellants do not present any evidence that the adaptation of such a control system to Wojciehowski's accessory power generation system was beyond the abilities of one of ordinary skill in the art or yields unexpected results. Appellants have not shown that the Examiner erred in rejecting claim 20 as obvious.

Claim 21

Appellants assert that "Claim 21 is allowable because neither Wojciehowski et al. nor Schafer et al. has a monitoring means comprising an electronic engine control device which receives at least one input signal about said incipient change in power demand." (App. Br. 12.) Appellants again argue that Schafer does not receive an input signal about the incipient change in power demand. (*Id.*) We have addressed this argument in the context of claim 20, and found it unpersuasive. Also, Appellants attack the references individually, but fail to articulate why the combination does not render the claimed subject matter obvious. Appellants have not shown that the Examiner erred in rejecting claim 21.

Claim 22

Appellants assert that "Claim 22 is allowable for the same reasons as claims 20 and 21," and that Schafer's "FADEC is used in a different manner

for different purposes [than the FADEC recited in claim 22].” (App. Br. 13.) These arguments are unavailing for the reasons set forth above. Appellants have not shown that the Examiner erred in rejecting claim 22.

Claim 23

Dependent claim 23 recites “a control valve which is opened or modulated by a signal from said electronic engine control device.” Appellants again address the references individually, but fail to explain why the claimed subject matter would not have been obvious over the combination of Wojciehowski’s control valve and Schafer’s electronic engine control device. (App. Br. 13.) Thus, Appellants have not shown that the Examiner erred in rejecting claim 23.

Claim 24

Appellants appear to argue that claim 24 is patentable because neither cited reference discloses bleed air from a high pressure compressor. (App. Br. 13.) Appellants assert that “high pressure compressor ... is a term that has significance in the art.” (*Id.*) Thus, Appellants implicitly concede that such compressors are well known in the art. Schafer discloses a high pressure compressor. (Fact 16.) Appellants do not present any evidence that the use of high pressure compressor bleed air in the system of the combined references was beyond the capabilities of the ordinary artisan or yielded unpredictable results. Further, the selection of the high pressure compressor as the source of bleed air is an obvious design choice in that a person of ordinary skill in the art wishing to power an air motor would gravitate towards such a source of high pressure air. *See KSR Int’l Co.*, 550 U.S. at

_____, 127 S. Ct. at 1742 (“When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.”). Appellants have not shown that the Examiner erred in rejecting claim 24 as obvious.

Claim 25

Appellants contend that “Claim 25 is allowable because neither reference teaches or suggests a feedback loop for transmitting a signal to the electronic control device representative of control valve position.” (App. Br. 13.) Appellants do not dispute the Examiner’s finding that Schafer’s FADEC system has feedback loops (Fact 17), but rather argue that the references do not disclose a feedback loop transmitting a control valve position signal. (App. Br. 13.) However, Appellants do not address the combined teachings of the cited references, which is the focus of the obviousness analysis. *See In re Keller*, 642 F.2d at 425. Appellants fail to present evidence or argument that utilizing a feedback loop transmitting a signal indicating the state of the controlled structure (the position of Wojciehowski’s bleed air valve) to the controller (Schafer’s FADEC) is a technique unknown to the ordinary artisan. Appellants have not shown that the Examiner erred in rejecting claim 25.

Claim 32

Claim 32 depends from claim 20 and recites “wherein operation of said pneumatically operated means increases an amount of stall margin available to a high pressure compressor of said engine.” The Examiner

found that the operation of the Wojciehowski's pneumatically operated means inherently increases the stall margin available to the high pressure compressor. (Fact 9.)

Appellants assert that Wojciehowski's pneumatic motor "is completely independent of engine operation [and] has no effect on engine operation." (App. Br. 13.) However, Wojciehowski's motor is driven by parasitic bleed air extracted from the working cycle of the engine, and thus has an effect on engine operation and is not "completely independent of engine operation." (Fact 5.)

Appellants also argue that Wojciehowski lacks a high pressure compressor. (App. Br. 14.) As discussed above regarding claim 24, the use of a high pressure compressor was obvious in light of the combined teachings of the cited references.

Appellants argue that the Examiner has not established inherency of the recited increased stall margin. (App. Br. 3; Reply Br. 2-3.) Where, as here, the Patent Office has reason to believe that a functional limitation is an inherent characteristic of the prior art, Appellants have the burden to show that the prior art does not possess that characteristic. *See In re Best*, 562 F.2d 1252, 1254-55 (CCPA 1977) (quoting *In re Swinehart*, 439 F.2d 210, 212-13 (CCPA 1971); *see also In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990) ("when the PTO shows sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not."). The Examiner's determination of inherency is reasonable in light of the Specification's discussion of improving the stall margin by opening a compressor bleed and by using a pneumatically operated device rather than mechanical shaft power. (Facts 10, 11.)

Appellants assert that the supply of bleed air during the operation of Wojciehowski's pneumatic motor "has no effect on the stall margin of the engine." (App. Br. 14.) However, Appellants do not offer any evidence to support this assertion or to otherwise rebut the Examiner's determination of inherency. Appellants have not shown that the Examiner erred in rejecting claim 32.

The Rejection of Claims 26, 27, 30, and 31 Under 35 U.S.C. § 103(a) as Unpatentable Over Wojciehowski, Schafer and AAPA

Dependent claims 26, 27, 30, and 31 pertain to the configuration and application of the "pneumatically operated means" recited in claim 20. Appellants argue these claims as a group. (App. Br. 14-16.) We select claim 26 as representative of the group in deciding the appeal with respect to this rejection. 37 C.F.R. § 41.37(c)(1)(vii). Claim 26 recites: "wherein said pneumatically operated means comprises a pneumatically integrated generator for supplying electrical power to operate at least one accessory selected from the group consisting of a generator, a starter/generator, a fuel pump, a deoiler, a PMA, a lube pump, and a hydraulic pump." Appellants do not dispute that the features of claim 26 are well known in the art. (*See* Fact 20; App. Br. 14-15.) Rather, Appellants argue that the rejection fails to state a motivation to "add the features claimed" to Wojciehowski and Schafer, and assert that there must be "a teaching, a suggestion, or motivation which flows from the references." (App. Br. 14, 15 (citation omitted).) This argument is foreclosed by *KSR*, in which the Court rejected the rigid requirement of a teaching, suggestion or motivation to combine known elements in order to show obviousness. *KSR Int'l Co.*, 550 U.S. at ___, 127 S. Ct. at 1741. The Court noted that an obviousness analysis "need

not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int’l Co. Co.*, 550 U.S. at ___, 127 S. Ct. at 1741.

Appellants also argue that there is no motivation to combine the references because the claimed features are not needed to operate or improve Wojciehowski’s liquid spraying system. (App. Br. 15.) This contention reflects an unduly restricted view of the obviousness analysis. “A person of ordinary skill is also a person of ordinary creativity, not an automaton.” *KSR Int’l Co.*, 550 U.S. at ___, 127 S. Ct. at 1742. Wojciehowski teaches a system with an accessory pump driven by an air turbine-type motor utilizing a gearbox. (Fact 4.) Other pneumatically integrated generators and driven accessories were well known in the art. (Facts 18-20.) Each of the systems defined by claims 26, 27, 30 and 31 is merely the substitution of one known element for another that would yield a predicable result. *See KSR Int’l Co.*, 550 U.S. at ___, 127 S. Ct. at 1740. As such, Appellants have not shown that the Examiner erred in rejecting those claims as obvious.

CONCLUSIONS

We conclude that the Appellants have failed to show that the Examiner erred in rejecting claims 20-25 and 32 under 35 U.S.C. § 103(a) as unpatentable over Wojciehowski and Schafer, and claims 26, 27, 30, and 31 under 35 U.S.C. § 103(a) as unpatentable over Wojciehowski, Schafer and AAPA.

DECISION

The decision of the Examiner to reject claims 20 through 27 and 30 through 32 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED

LV:

BACHMAN & LAPOINTE, P.C.
900 CHAPEL STREET
SUITE 1201
NEW HAVEN, CT 06510